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SECURITY INFORMATION

CENTRAL INTELLIGENCE AGENCY

18 February 1953

MEMORANDUM FOR: Mr. Howard Wiedemann (OIR)
Lt. Colonel Dean Vanderhoef, USA (G-2)
Commander William Clark, USN (ONI)
Colonel Jack Thomas, USAF (AFOIN-2B)
Colonel Linscott Hall, USAF (JIG)

SUBJECT : SE-36: Soviet Capabilities for Attack on the US through Mid-1955

REFERENCE : O/NE Memorandum to the IAC dated 9 February 1953

1. The attached draft has been prepared by the O/NE Staff on the basis of existing national and departmental estimates.

2. Where different estimates exist on important points (e.g. the range of the TU-4), we have included both estimates.

3. This text has not been reviewed by the Board of National Estimates. The primary purpose of circulating it to you now is to get working-level review and amendments in order to permit a revision of the text along the lines which it would have taken had there been time to get written contributions from you in the first instance.

4. The next step will be discussed at a meeting now scheduled for 10:00 Thursday, 19 February, in Room 132 South Building. No preparation is required by you for this meeting.

[redacted] 25X1A9a

D/Asst.Director/Adm.
National Estimates

cc: [redacted] (OSI) 25X1A9a

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SECURITY INFORMATION

CENTRAL INTELLIGENCE AGENCY

OFFICE OF NATIONAL ESTIMATES

17 February 1953

SUBJECT: SE-36: SOVIET CAPABILITIES FOR ATTACK ON THE US THROUGH MID-1955 (Preliminary draft)

THE PROBLEM

To estimate the capabilities of the USSR to attack the continental US by open or clandestine means, through mid-1955.

ASSUMPTION

1. The USSR has decided to attack the US, recognizing that such an attack would precipitate a general war with the US.

2. The USSR has concluded that circumstances are such that a general war with the US would be an acceptable method of contributing to its long-range objective of a Communist world dominated by Moscow.

I. SOVIET MASS DESTRUCTION WEAPONS

A. Atomic Weapons

1. General: The Soviet atomic energy program has enjoyed, and almost certainly during the period of this estimate will continue to enjoy, one of the highest priorities in the Soviet allocation of resources. The objective of the program continues to be on weapon development and the achievement of a rate of weapon production and flexibility which will place the USSR in the best possible power position vis-a-vis the US. The USSR has made substantial progress toward this objective. In atomic weapons, the USSR has reached a point in weapon technology at which the weapons stockpiled can be dictated by military requirements rather than by technical limitations.

2. Atomic Weapons Stockpiles: Other than some information on the composition and efficiencies of the bombs tested by the USSR, there is no specific information available concerning the characteristics of weapons presently stockpiled or likely to be stockpiled during the period of this estimate. In calculating stockpiles it has been assumed that the USSR will fabricate both all-plutonium weapons and composite weapons, and that it will produce as many composite weapons as possible. The table below contains the best available estimate of the Soviet stockpile for the period mid-1952 to mid-1955:

Date	Number of Bombs (30-100 KT)
Mid-1953	120
Mid-1954	200
Mid-1955	300

3. Error and Variations on Stockpile Estimate: Because of the nature of the information on which it was based, the above estimate is subject to considerable error. In view of the uncertainty in the production of fissionable materials, particularly uranium-235, the stockpile for the period under review may be as low as one-third less (i.e., as low as 200 for mid-1955) or as high as twice (i.e., 600 for mid-1955) the figure given. It is also possible, by changing the weapon components to increase or decrease the number of weapons in stockpile substantially with a given quantity of fissionable material. Such changes would, however, alter the kilotonnage yields according to the quantities of fissionable material used in the individual weapons. Judging by the high efficiencies achieved in the second and third atomic tests, the USSR could probably obtain kilotonnage yields close to the high end of the 30-100 KT yield used in the table for a given quantity of fissionable material. It is estimated that the USSR is probably capable of producing fission weapons yielding

200-500 kilotons but in so doing would reduce the number of weapons in their stockpile. On the other hand, they could also make smaller weapons than those used in calculating the stockpile estimates made in the above table. It is possible, therefore, that by the end of the period of this estimate the USSR will be approaching a stage in which the availability of weapons may not be a major limiting factor in the scale of an attack which could be launched against the United States.

B. Thermonuclear Weapons:

4. It is believed that the USSR has not conducted thermonuclear tests. Research which may be relevant has been noted, but there is no evidence of development activity at the present time. There is, however, a growing Soviet capability for quantity production of thermonuclear materials. Consequently, more advanced research, development, and even field testing are possible by mid-1954. We cannot assume that the USSR will not have a workable thermonuclear weapon by mid-1955.

C. Radiological Weapons:

5. It is most unlikely, for technological reasons, that the USSR will have the capability to produce militarily significant quantities of radiological warfare agents, although the USSR will have available small quantities of gross or separated fission products which might be employed as RW agents primarily for their psychological effect.

D. Biological Warfare:

6. Intelligence information and Soviet scientific publications indicate that the USSR has extensive knowledge of the dissemination of agents causing botulism, plague, tularemia, brucellosis, various quick-acting intestinal diseases, and some virus diseases. Little information is available regarding the production of, and none regarding the stock-piling of, BW agents. The USSR could probably mass-produce such agents if it so desired.

E. Chemical Warfare:

7. The USSR can probably engage in chemical warfare on a large scale. It has large stocks of chemical warfare agents, including nerve gases. Moreover, research is continuing and new nerve gases are probably under development.

II. DELIVERY OF CONVENTIONAL AND MASS DESTRUCTION WEAPONS BY AIRCRAFT

8. Present Strength of Long Range Aviation: Long-range Aviation, consisting of three Air Armies, one in the Far East and two in the western USSR, constitutes the strategic striking force of the USSR. The TU-4 is the only Soviet bomber, known to be in operational use, capable of carrying mass destruction weapons to distant targets. In December 1952 the number of TU-4's believed to be operational use

was estimated at 900 aircraft. (This figure was based primarily upon the Table of Equipment strength of Soviet air regiments known to be equipped with, or in the process of being equipped with, TU-4 aircraft.) About 20%, or about 190 TU-4's, of the medium bomber strength is located in the Far East.

9. Future strength of Long-Range Aviation: Future Soviet long-range bomber strength is difficult to estimate. No prototype jet medium bomber capable of attack on the continental US from Soviet bases has yet been observed. A prototype heavy bomber has been observed and was probably powered by a piston engine. It is speculated that it may ultimately be powered by a turboprop engine. This type of aircraft is not known to be in series production. Estimated future strengths are also uncertain because there is not adequate intelligence on rates of production of the TU-4 and because even estimated rates, based upon presently known production facilities, could become obsolete if the USSR were to devote additional resources to production. The future strength estimates given below are based upon the assumption that the USSR is now producing, or is about to initiate series production of, other types than the TU-4.

	Mid-1953	Mid-1954	Mid-1955
Medium Bomber			
Jet	Possible Prototype	10/20	120
Piston	900	1000	900
Heavy Bomber	Few	40/80	180
Total	900	1050 - 1100	1200

10. TU-4 Aircraft Characteristics: The TU-4, under normal operating conditions, is estimated to have a combat radius of [1700] 1900 nautical miles, and a combat range of [3100] 3320 nautical miles with a 10,000 pound bomb load. Under cruise control conditions necessary to reach distant target areas, its speed would be approximately 175 knots at an altitude of about 10,000 feet. However, it is capable for a limited period of time of attaining a maximum speed of 347 knots at about 32,500 feet with a service ceiling of 39,500. [With technical modifications and improvements, the TU-4 by mid-1955 might be able to increase its combat radius to 2650 nautical miles (3700 with one aerial refueling) and its range to 5000 nautical miles.]

11. Future Heavy Bomber Characteristics: It is estimated that the prototype heavy bomber, assuming it is equipped with a turboprop power plant, would by mid-1955 have a combat radius of [3420] 3700 nautical miles and a range of [6600] 7000 nautical miles carrying a 10,000 pound bomb load. It would have a speed of 360 knots at 30,000 feet. Under cruise control conditions necessary to accomplish long distance mission, the flight speed would be somewhat lessened. Aerial refueling with this aircraft is not considered practicable in view of the limited numbers which would be available even if series production was undertaken.

12. Base Areas for direct air attack on the US: The closest base areas to the US are the Kola Peninsula area in the northwest USSR, Soviet and Soviet-controlled territory along the Baltic and in Eastern Germany, and the Chukotski Peninsula in northeast Siberia. Of these three, the Chukotski is nearest to the US. From this area, the present Soviet TU-4 under normal operating conditions /could bomb only the northwest extremities of the US and return to the base. Flying a one-way mission from Chukotski such a plane could barely reach New York, but could strike anywhere north and west of a great circle from Boston to San Antonio, including all of the Great Lakes and Upper Mississippi Valley. By mid-1955, if the USSR made the technical improvements and modifications in the TU-4 of which it is probably capable and developed aerial refueling techniques, planes based in the Chukotski Peninsula could reach all of the US except southern Florida and probably return to their bases. On one-way missions, such aircraft could reach any point in the US./ /could not bomb even the northwest extremities of the US and return to their bases. Flying a one-way mission from Chukotski such a plane could not reach New York or the Great Lakes industrial region, but could strike in the Los Angeles area. If the USSR was willing to accept the high attrition attendant with aerial refueling over defended territory even with fully developed aerial refueling techniques, it is possible to reach all important target areas in the US on a one-way mission./

13. However, the Chukotski Peninsula is a poor base area from the standpoint of weather and logistics. It has now no known first-class airfields which could be used for sustained operations, although there are several airfields which could be employed as staging areas for a limited number of sorties.

14. Present TU-4 aircraft based in the Kola Peninsula area and the Baltic-East Germany area could not reach the US, and return to their bases. [On one-way missions they could barely reach New York, but could range over New England and Upper New York State. By mid-1955 if the USSR made the technical modifications and improvements in the TU-4 of which it is probably capable and developed aerial refueling techniques, planes based in these areas could reach most of the northern and northeastern US, including the Great Lakes, and return to their bases. On one-way missions they could reach any point in the US.] [nor could they, on one-way missions, reach New York City or the industrial area of New England and upper New York State. If the USSR was willing to accept the high attrition attendant upon aerial refueling over defended territory, TU-4's on one-way missions could reach the northeastern US, but could not reach the southern, south-central or western parts of the country.]

15. The Kola Peninsula area does not now have bases capable of sortie-ing medium bombers, but has several airfields which could readily be adapted to do so. Supply would not be a difficult problem.

This area would afford the advantage of great circle routes which would obviate overflight of nations friendly to the US. The Baltic-East German area has adequate bases to support large numbers of medium bombers. Weather and logistics would be favorable. They are, however, even more distant from key US target areas, flights would be subject to greater risk of detection, and only a very limited number of target areas could be reached even on one-way missions using aerial refueling.

16. Crew Proficiency: Achievement of a high-level of combat effectiveness has been retarded by lack of combat experience and by restrictions upon flying imposed by the Soviet security system. Intensive training has been underway for five years, but there is no evidence of extensive training in long-distance flying and navigation, or of the development of operational aerial refueling techniques and equipment.

17. It is possible, however, that by mid-1955 some of these deficiencies will be removed. It is also possible that even now a limited number of crews has been given sufficient training to undertake an attack against the US. If the Soviet aviators should be trained and equipped with the navigational aids which the USSR could probably produce in quantity if it chose to do so, Soviet aviators could probably cross even the polar region and stay on course.

18. Targeting and Bombing Accuracy: The USSR is able to obtain all the data necessary for identification of targets in the US under visual and blind bombing conditions. The USSR possesses optical bombsights equivalent to US World War II type models. Soviet aviators could therefore be expected to execute satisfactory bomb placement under visual conditions. The USSR has produced, and is equipping its TU-4 and IL-28 (light) bombers with blind-bombing and navigation type radars of the US AN/APS-15 and AN/APQ-13 variety. The accuracy of the Soviet blend bombing system is estimated at about 3000 feet CEP.

19. Availability, Abort Rate, Replacement Factor: From a variety of circumstantial evidence, including US experience, it is estimated that the USSR could sortie about 90% of its TU-4 strength for an initial, deliberately-prepared surprise attack. However, considering the limitations of base areas for use against the US only a limited percentage of these aircraft could be staged against targets in the US. In view of the fact that /most/ /all/ US target areas could be reached only by one-way aerial refueling missions, the attrition rate would be /100%/ /almost 100%/. The abort rate on those staged against US targets is estimated at 20-25% without consideration for interception and poor navigation, and with varying increases according to season, weather, extent of preparation, and other factors. No appreciable reserves of TU-4's are believed available (the same would apply to any new types of aircraft introduced during this period). At present, TU-4 production

is estimated at 20 planes per month, a figure which could probably be increased slightly in the short run. A considerableexpansion of plant capacity, or the conversion of ther plants to bomber production would be necessary if the USSR were to plan on a sustained strategic bombing campaign.

20. Weather: No intelligence is available concerning Soviet doctrine for the tactical use of weather conditions. The USSR has excellent weather reporting facilities in the Siberian area and is probably capable of making reasonably accurate predictions of route weather conditions on a day-to-day basis. Weather conditions in potential base and route areas almost certainly would have a serious limiting effect upon operational capabilities in certain seasons.

21. Electronic Countermeasures: The USSR has had access to a wide variety of US defensive radar and to US jamming equipment. The USSR is apparently well aware of the tactical advantage to be gained by jamming defensive radar and other communications. It has demonstrated a high proficiency in jamming conventional broadcasts. From circumstantial evidence, it is believed probable that the USSR has produced sufficient electronic countermeasures devices to equip some TU-4 aircraft. It is not known whether Soviet TU-4's have in fact been equipped with such jamming equipment, or what would be the effectiveness of those devices against US defensive radar

III. DELIVERY OF CONVENTIONAL AND MASS DESTRUCTION WEAPONS BY OTHER MEANS

A. Guided Missiles

22. General: There is no positive information that the USSR now has any guided missiles in an operational status. It is known that the USSR has been conducting an intensive research and development program, and it appears that an objective of that program is to produce operational missiles at the earliest possible date. The V-1 and V-2 type weapons, which were used operationally by the Germans during World War II, are estimated to be the only missiles presently available. These types probably have been improved, and may be available in limited numbers. Neither is known to be in series production.

23. V-1 Characteristics: The V-1 is a winged missile on which the USSR has continued development. A single engined version could carry a 2000 lb. warhead to a range of 210 nautical miles at a speed of 370 knots. A twin jet version has been developed which could carry a warhead up to 4500 lb. to a range of 75 nautical miles with a compensating increase in range with decreased warhead weight. There is fragmentary evidence that the USSR has investigated the possibility of launching V-1's from submarines; this could also apply to surface vessels. It is conceivable that the V-1 type could be fitted with an atomic warhead, although there is no indication that the USSR has either developed

such a warhead type or incorporated it in a guided missile. It is estimated that the USSR would not attempt to carry improvements in this missile type toward increase in range or speed but would accent the factors of reliability, load carrying characteristics, accuracy, and the techniques of rapid preparation and firing from the launching craft.

24. V-2: The USSR has carried forward the development of the German V-2 type ballistic missile; however, this missile could not conceivably produce a threat against the continental US during the period of this estimate.

B. Clandestine Delivery

25. Atomic Weapons: [To be prepared upon receipt of special JAEIC contribution.]

26. Biological Weapons: BW agents are peculiarly adaptable to clandestine delivery, and they could be introduced preceding or after an open surprise attack, or without an open surprise attack even taking place. Small amounts of BW agents, introduced under cover of diplomatic immunity or by smuggling, would be difficult to detect or identify as to source. In almost all cases, the dissemination of BW agents would require the clandestine collaboration of US residents, and this is a serious limitation upon either their massive dissemination or, because

of Soviet security considerations, their use immediately preceding an open surprise attack. There is no evidence, however, that the USSR is developing the means for the clandestine delivery of biological weapons.

27. Chemical Weapons: Unlike BW agents, CW agents are not easily adaptable to clandestine use. In addition to the limitations noted above as applicable to BW attack, CW agents are easily identifiable by their immediate effects and it would hardly be feasible to build up sufficient supplies or procure the means clandestinely for their dissemination against large population centers. The most practicable use would be against personnel in key installations immediately preceding an open attack. In this instance, Soviet security considerations might preclude such an effort. There is no evidence that the USSR is developing the means for the clandestine delivery of chemical weapons.

IV. ATTACK ON THE US WITH CONVENTIONAL NAVAL AND AIRBORNE FORCES

A. Conventional Naval Attack

28. Soviet capabilities for attacking the US with naval forces carrying conventional armament are comparatively low.[1/] The

1/ As noted in paragraph 22 above, the USSR could, if it chose, develop a capability for the delivery of guided missiles carrying an atomic warhead by launching a V-1 type missile from a submarine or surface vessel.

Soviet surface fleet is geographically divided, lacks advance bases, has limited operational experience, and does not possess a shipborne air arm. Its minor combatant vessels, including amphibious types, are entirely unsuited for transoceanic attack. The Soviet merchant marine, which would be called upon to provide the lift, could not be developed into an efficient auxiliary element to amphibious operations or any significant scale. The only substantial naval threat to the US which the USSR could muster would be that of its submarine force. In addition to its potential in connection with the delivery of mass destruction weapons, the submarine force could, at least in the initial phases of a conflict, inflict serious damage on certain US overseas communications and carry out offensive mining in the shipping approaches to principal US harbors. Except for enlargement of the submarine force, replacement of older and limited-range vessels by new snorkle types, and the adaptation of submarines to missile launching, little change in the over-all Soviet naval capability is expected during the period of this estimate.

B. Airborne Attack

29. Soviet capabilities for airborne attack upon the US are also very limited. The USSR does not possess any operational transport aircraft capable of two-way missions to the US. TU-4's could be adapted for troop-carrying service and operate within the same limits and under the same conditions as the TU-4 bomber. There is no indication

that the USSR has made any plans for the dropping of airborne forces in the US, but the USSR could, if it chose, drop specially trained assault and sabotage forces for attack upon important but difficult bombing targets.

V. SOVIET AIR DEFENSE

30. The Soviet rulers have devoted to the improvement of their air defense system an allocation of effort and resources which is probably second only to the Soviet atomic weapons program. This air defense effort has faced numerous developmental and production problems, and despite considerable progress, deficiencies still exist. There are insufficient numbers of trained personnel, modern interceptors, radars, and heavy AA guns. Part of the air defense communications network is subject to long-range jamming. Interceptor capabilities under conditions of poor visibility are seriously limited. By mid-1954, some of these deficiencies will be reduced. The interceptor force will probably be fully jet-equipped, all-weather interception facilities improved, and communications vulnerabilities reduced. Further improvements will be accomplished by mid-1955. Nevertheless, we do not believe that the Soviet rulers will at any time during the period of this estimate conclude that their air defense system would be of sufficient quality to prevent substantial numbers of attacking planes from finding strategic targets.

VI. EFFECT OF OVERALL SOVIET CAPABILITIES AND VULNERABILITIES UPON THEIR STRATEGY IN THE ASSUMED SITUATION

31. The Soviet rulers would probably estimate that:

a. If not blocked, the US could inflict an unacceptable level of damage upon the USSR by strategic air attack.

b. There is not adequate assurance that the Soviet air defense system could prevent an unacceptable level of damage from occurring.

c. The USSR would be unable to invade and occupy the US by military forces.

d. The US and the other free world countries possess an overwhelming quantity of the world's resources and if permitted to mobilize those resources could probably defeat the USSR.

32. The Soviet rulers probably would, therefore, pursue the following strategy:

a. They would employ the maximum effective air bombardment effort against US strategic air facilities in the US and overseas.

b. They would attempt to deny to the US access to or control over strategically important areas of the Eurasian land mass. To this end, they would attempt to occupy as much of the

Eurasia as possible and to sever its communications with the US. They would utilize such resources as remained (after allocation to US strategic air facilities) to assist in establishing such control and to prevent the US from assisting or reinforcing defending forces.

c. They would attempt to destroy the overall US ability to wage war against the USSR by additionally utilizing such resources as remained (especially air bombardment resources) against military and quasi-military targets in the US and the general industrial, economic and psychological strength of the US.

d. Aside from any conceived priority in the general allocation of resources, the Soviet rulers might make special efforts in order to achieve damage or destruction of critical targets or to achieve political or psychological advantage.

33. As among the available forces and weapons for attacking the US, the USSR would be obliged to rely primarily upon open military attack with atomic bombs delivered by TU-4 aircraft, for the following reasons:

a. The low capabilities of conventional naval forces and airborne forces.

b. The security difficulties inherent in large-scale clandestine attack. (The Soviet rulers have a pathological

distrust of their own people, including Communists, and almost certainly would not trust them in massive clandestine operations under circumstances in which defection or failure would have potentially disastrous consequences for the USSR itself.)

c. Other methods of delivery of atomic weapons are insufficiently developed for effective use.

d. Other mass destruction weapons are insufficiently developed or subject to other handicaps in their large-scale use.

34. The Soviet rulers might, however, rely upon other methods of attacking the US concurrently with or immediately following an open and direct atomic attack. In the cases of guided missiles, airborne attack, submarine bombardment, and biological warfare, Soviet capabilities at best appear to be severely limited. Chemical attack in connection with, or subsequent to, atomic bombing is a more serious possibility.

35. It is entirely reasonable to expect that it will do so, and that magnitude of the Soviet threat will be greater. We believe, however, that their overall strategy and the priorities assigned to offensive resources, will remain throughout this period essentially the same as those outlined in paragraph 32. Likewise the Soviet rulers throughout this period would be obliged to rely primarily upon open military attack with atomic bombs delivered by TU-4 aircraft, although additional types of weapons and aircraft may be available in limited numbers.